

REMARKS/ARGUMENTS

Review and reconsideration on the merits are requested.

In response to the objections to claims 1-7 as set forth at paragraph 1 of the Official Action, those claims have been amended as suggested by the Examiner.

In response to the rejection under 35 U.S.C. §112 of claim 30, claim 30 has been amended to define “5% by weight of polyethylene glycol.” In view of this amendment, the applicants requests that the rejection under §112 be withdrawn.

Claims 1-27 and 30 stand rejected under 35 U.S.C. §103 as being unpatentable over Martin in view of Barstad. The applicants traverse this rejection. In making the rejection, the Office appears to be neglecting the recitation in claim 1, line 9 which defines the electroplating bath as being devoid of a leveler or a brightener. The applicants note that claims 28 and 29 are not subject to this rejection. When those claims are rejected, at paragraph 8 of the Office Action, the Office Action states that “Martin et al., Barstad et al. and Anthony differs from the instant invention because they do not teach the use of a plating bath devoid of brighteners, as recited in claim 28, or a plating bath devoid of brighteners and levelers as recited in claim 29.” In fact, Martin et al. teaches a “standard copper plating bath.” That bath contains an unnamed PPR carrier and an unnamed PPR additive. Based upon this teaching and the description of the bath as being a “standard bath” the Office cannot conclude that Martin teaches or suggests the method of claim 1 wherein the bath is defined as devoid of levelers or brighteners.

Barstad is cited as teaching certain aspect ratios. Barstad is not cited as remedying the defect in Martin as discussed above. Accordingly, the rejection fails.

At paragraph 6 of the Office Action, claims 1-27 are rejected over Martin et al. in view of Anthony. Anthony is cited as teaching the claimed aspect ratios similar to Barstad above. Accordingly, the rejection over Martin and Anthony similarly fails.

At paragraph 7 of the Office Action claims 1-20 and 27-29 are rejected over Dubin et al. in view of Martin. Dubin et al. is cited relative to claims 27-29 as teaching a plating bath containing copper, sulfuric acid, chloride ions, and a suppressing agent such as PEG. The applicants submit that Dubin does not remedy the basic defects in the teachings of Martin relative to levelers and brighteners. In this regard, the applicants submit that a person of ordinary skill in

the art would not be led to use the Dubin bath in conjunction with the teachings of Martin. The applicants submit that there are a myriad of electroplating baths available in the art and in making the rejection, the Office has not identified any teaching in Dubin that would necessarily lead a person skilled in the art to use these particular baths in conjunction with the teachings of Martin. Additionally, Dubin does not expressly exclude the use of levelers and brighteners. For this reason, the rejection over Dubin in view of Martin fails.

At paragraph 8 of the Office Action claims 28 and 29 are rejected over Martin, Barstad, or Anthony in view of Chen. The Office contends that Chen teaches a plating bath without levelers or brighteners and that Chen would lead a person of ordinary skill in the art to modify the principal references in this regard. The applicants vigorously disagree. The applicants submit that there is no teaching in Chen that would lead a person of ordinary skill to adopt this particular teaching with respect to electroplating cavities having high aspect ratios using the claimed current conditions. Specifically, Chen addresses the formation of ultra-thin metal seed layers. The formation of these seed layers does not involve parallel considerations to plating high aspect ratio through holes and cavities.

At paragraphs 10 and 11 of the Official Action the claims are rejected for double patenting. The applicants traverse these rejections but reserve the right to file a terminal disclaimer. The applicants note that the rejection at paragraph 11 is only a provisional rejection at this time. With regard to both rejections, the applicants submit that the commonly assigned patent and application do not disclose the fabrication of circuit boards having cavities with high aspect ratios. While circuit boards having such features are known, a person of ordinary skill in the art would not necessarily be led to fabricate them using the methods described in these commonly assigned references. This application is directed to a method of manufacture that presents unique demands. That the claimed conditions would be particularly suited for plating high aspect ratio features is not suggested by the teachings in the cited art.

In view of the foregoing arguments, the rejections should be withdrawn and this case should be passed to issue.

Favorable action on the merits is requested.

Respectfully submitted,

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